voice with the genetic policy process: a case study Gregory Fowler

April 2002 Proceedings of the 12th annual conference on Computers, freedom and privacy

Full text available: pdf(38.79 KB) Additional Information: full citation, abstract

The application of genetic information will shape economies and lives throughout the next century and beyond. At the current pace of discovery, genetic research will bring advances in pharmaceuticals and therapeutic treatments that not only serve to reduce human suffering, but also offer people new choices and greater control over their lives. But, what humanity will do with this new technology and knowledge remains to be seen. Current thinking on our genetic future ranges from fearful predictio ...

84 Group classification using a mix of genetic programming and genetic algorithms Aaron Konstam

February 1998 Proceedings of the 1998 ACM symposium on Applied Computing

Full text available: pdf(583.28 KB) Additional Information: full citation, references, index terms

Keywords: classification, discriminant functions, genetic algorithms, genetic programming

85 Genetic programming applied to Othello: introducing students to machine learning research

Eleazar Eskin, Eric Siegel

March 1999 ACM SIGCSE Bulletin, The proceedings of the thirtieth SIGCSE technical symposium n C mputer science educati n, Volume 31 Issue 1

Additional Information: full citation, abstract, references, citings, index Full text available: pdf(670.28 KB)

In this paper we describe and analyze a three week assignment that was given in a Machine Learning course at Columbia University. The assignment presented students with an introduction to machine learning research. The assignment required students to apply Genetic Programming to evolve algorithms that play the board game Othello. The students were provided with an implemented experimental approach as a starting point. The students were required to perform their own experimental modifications cor ...

86 Using assortative mating in genetic algorithms for vector quantization problems Carlos Fernandes, Rui Tavares, Cristian Munteanu, Agostinho Rosa March 2001 Proceedings of the 2001 ACM symposium on Applied computing Additional Information: full citation, references, index terms Full text available: pdf(93.63 KB)

Keywords: assortative mating, genetic algorithm, genetic diversity

87 Using genetic algorithms to generate Steiner triple systems Stephen J. Hartley, Aaron H. Konstam March 1993 Proceedings of the 1993 ACM conference on Computer science

Additional Information: full citation, abstract, references, citings, index Full text available: pdf(748.43 KB) terms

Steiner systems, particularly triple systems, are usually generated by mathematicians using techniques from the theory of groups and quasi-groups. When pencil-and-paper enumeration becomes infeasible, mathematicians have used computers to carry out exhaustive searches. This paper presents some results of using genetic algorithms, which do not use exhaustive search, to generate Steiner systems. A specialized mutation operator was effective in generating Steiner triple systems. Future researc ...

88 A genetic-algorithm approach to solving crossword puzzles

Titus D. M. Purdin, Geoff Harris

March 1993 Proceedings of the 1993 ACM/SIGAPP symposium on Applied computing: states of the art and practice

Full text available: pdf(654.57 KB) Additional Information: full citation, references, index terms

89 A genetic local search algorithm for random binary constraint satisfaction problems Elena Marchiori, Adri Steenbeek

March 2000 Proceedings of the 2000 ACM symposium on Applied computing

Full text available: pdf(449.20 KB) Additional Information: full citation, references, index terms

90 A genetic algorithm for fragment allocation in a distributed database system Arthur L. Corcoran, John Hale

April 1994 Proceedings of the 1994 ACM symposium on Applied computing

Full text available: pdf(486.92 KB) Additional Information: full citation, references, index terms

Keywords: distributed databases, genetic algorithms

Kwang-Ting Cheng

October 1996 ACM Transactions on Design Automati n of Electronic Systems (TODAES), Volume 1 Issue 4

Full text available: pdf(448.19 KB)

Additional Information: full citation, abstract, references, citings, index terms

This paper discusses the gate-level automatic test pattern generation (ATPG) methods and techniques for sequential circuits. The basic concepts, examples, advantages, and limitations of representative methods are reviewed in detail. The relationship between gate-

ortai	acm.org/results.cim?query-genetic%20%3Chear%2F2%3E%20design&querydisp-genetic	rage
	level sequential circuit ATPG and the partial scan design is also discussed.	
	`Keywords: IC testing, automatic test generation, sequential circuit test generation, testing	
96	Designing RNA structures: natural and artificial selection Barry Cohen, Steven Skiena April 2002 Proceedings of the sixth annual international conference on Computational biology Full text available: pdf(1.45 MB) Additional Information: full citation, abstract, references, index terms	
	Messenger RNA (mRNA) sequences serve as templates for proteins according to the triplet code, in which each of the $4^3 = 64$ different codons (sequences of three consecutive nucleotide bases) in RNA either terminate transcription or map to one of the 20 different amino acids (or residues) which build up proteins. Because there are more codons than residues, there is inherent redundancy in the coding. Certain residues (e.g. tryptophan) have only a single corresponding codon, while other	
97	Polypeptide structure prediction: real-value versus binary hybrid genetic algorithms Charles E. Kaiser, Gary B. Lamont, Laurence D. Merkle, George H. Gates, Ruth Pachter April 1997 Proceedings of the 1997 ACM symposium on Applied computing	
	Full text available: pdf(727.53 KB) Additional Information: full citation, references, citings, index terms	
98	Keywords: genetic algorithms, hybrid genetic algorithms, polypeptide structure prediction, protein folding, real-valued genetic algorithms Device-level early floorplanning algorithms for RF circuits Mehmet Aktuna, Rob A. Rutenbar, L. Richard Carley April 1998 Proceedings of the 1998 international symposium on Physical design	
	Full text available: pdf(1.14 MB) Additional Information: full citation, abstract, references, citings, index terms	
	High-frequency circuits are notoriously difficult to lay out because of the tight coupling between device-level placement and wiring. Given that successful electrical performance requires careful control of the lowest-level geometric features—wire bends, precise length, proximity, planarity, etc.—we suggest a new layout strategy for these circuits: early floorplanning at the device level. This paper develops a floorplanner for RF circuits based on a genetic algorithm (GA) that s	
99	Designing seeds for similarity search in genomic DNA	
	Jeremy Buhler, Uri Keich, Yanni Sun April 2003 Proceedings of the seventh annual international conference on Computational molecular biology Full text as side by Target 200 (ALED). Additional informations full side in a photography and side in the second side	
	Full text available: pdf(246.01 KB) Additional Information: full citation, abstract, references, index terms Large-scale comparison of genomic DNA is of fundamental importance in annotating functional elements of genomes. To perform large comparisons e.ciently, BLAST [3, 2] and other widely used tools use seeded alignment, which compares only sequences that can be shown to share a common pattern or "seed" of matching bases. The literature suggests that the choice of seed substantially affects the sensitivity of seeded alignment, but designing and evaluating seeds is computationally challenging. This wo	
	Keyw rds : Mandala, biosequence comparison, genomic DNA, seed design, similarity search	

7/3/03

100 Genome-wide polymerase chain reaction primer design

Hai-Hui Huang, G. E. Hedrick, Robert Burnap, Haobo Liu



Full text available: pdf(587.37 KB) Additional Information: full citation, references, index terms

Keyw rds: DNA chips, client/server model, genome, polymerase chain reaction (PCR), primer design

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Relevance scale

1 Reconstructing occlusal surfaces of teeth using a genetic algorithm with simulated annealing type selection

Vladimir Savchenko, Lothar Schmitt

May 2001 Proceedings of the sixth ACM symposium on Solid modeling and applications

Full text available: 🔂 pdf(708.02 KB) Additional Information: full citation, abstract, references, index terms

In this paper, we present an application of numerical optimization for surface reconstruction (more precisely: reconstruction of missing parts of a real geometric object represented by volume data) by employing a specially designed genetic algorithm to solve a problem concerning computer-aided design in dentistry. Using a space mapping technique the surface of a given model tooth is fitted by a shape transformation to extrapolate (or reconstruct) the remaining surface of a patient's tooth wit ...

Keywords: computer-aided restoration design, constructive solid geometry, genetic algorithm, simulated annealing, space mapping, surface reconstruction, volume modeling

2 Solving combinatorial optimization problems using parallel simulated annealing and parallel genetic algorithms

Pooja P. Mutalik, Leslie R. Knight, Joe L. Blanton, Roger L. Wainwright

March 1992 Proceedings of the 1992 ACM/SIGAPP symposium on Applied computing: technological challenges of the 1990's

Full text available: 🔂 pdf(862.26 KB) Additional Information: full citation, references, citings, index terms

Comparison of global search methods for design optimization using simulation B. Stuckman, G. Evans, M. Mollaghasemi

December 1991 Proceedings of the 23rd conference on Winter simulation

Full text available: 🔂 pdf(687.84 KB) Additional Information: full citation, references, citings, index terms

Interactive manipulation of rigid body simulations

Jovan Popović, Steven M. Seitz, Michael Erdmann, Zoran Popović, Andrew Witkin July 2000 Proceedings of the 27th annual conference n C mputer graphics and interactive techniques

Full text available: pdf(886.24 KB)

Additional Information: full citation, abstract, references, citings, index terms

Physical simulation of dynamic objects has become commonplace in computer graphics because it produces highly realistic animations. In this paradigm the animator provides few physical parameters such as the objects' initial positions and velocities, and the simulator automatically generates realistic motions. The resulting motion, however, is difficult to control because even a small adjustment of the input parameters can drastically affect the subsequent motion. Furthermore, the animator o ...

Keywords: animation with constraints, physically based animation

5 Artificial intelligence approaches to software engineering: Using genetic algorithms and coupling measures to devise optimal integration test orders

Lionel C. Briand, Jie Feng, Yvan Labiche

July 2002 Proceedings of the 14th international conference on Software engineering and knowledge engineering

Full text available: pdf(94.62 KB) Additional Information: full citation, abstract, references, citings

We present here an improved strategy to devise optimal integration test orders in object-oriented systems. Our goal is to minimize the complexity of stubbing during integration testing as this has been shown to be a major source of expenditure. Our strategy to do so is based on the combined use of inter-class coupling measurement and genetic algorithms. The former is used to assess the complexity of stubs and the latter is used to minimize complex cost functions based on coupling measurement. Us ...

Keywords: genetic algorithms, integration order, integration testing, object-oriented software engineering

MAELSTROM: efficient simulation-based synthesis for custom analog cells
Michael Krasnicki, Rodney Phelps, Rob A. Rutenbar, L. Richard Carley
June 1999 Proceedings of the 36th ACM/IEEE conference on Design automation
conference



Tuli text available. Pul(129.41 Nb) Additional information. difficultion, teleferices, citings, index terms

7 VLSI cell placement techniques

K. Shahookar, P. Mazumder

June 1991 ACM Computing Surveys (CSUR), Volume 23 Issue 2

Full text available: pdf(5.28 MB)

Additional Information: full citation, abstract, references, citings, index terms, review

VLSI cell placement problem is known to be NP complete. A wide repertoire of heuristic algorithms exists in the literature for efficiently arranging the logic cells on a VLSI chip. The objective of this paper is to present a comprehensive survey of the various cell placement techniques, with emphasis on standard cell and macro placement. Five major algorithms for placement are discussed: simulated annealing, force-directed placement, min-cut placement, placement by numerical optimization, a ...

Keywords: VLSI, floor planning, force-directed placement, gate array, genetic algorithm, integrated circuits, layout, min-cut, physical design, placement, simulated annealing, standard cell

A combined simulation/optimization approach to process plant design
J. F. Faccenda, R. F. Tenga

December 1992 Pr ceedings of the 24th c nference on Winter simulati n

Full text available: pdf(590.01 KB) Additional Information: full citation, references, citings, index terms

9 A combination of genetic algorithm and simulated evolution techniques for clustering Jay Bhuyan



February 1995 Proceedings of the 1995 ACM 23rd annual conference on Computer science

Full text available: pdf(851.14 KB) Additional Information: full citation, references, index terms

10 A performance-driven IC/MCM placement algorithm featuring explicit design space exploration



Henrik Esbensen, Ernest S. Kuh

January 1997 ACM Transactions on Design Automation of Electronic Systems (TODAES), Volume 2 Issue 1

Full text available: pdf(485.86 KB)

Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>, <u>review</u>

A genetic algorithm for building-block placement of ICs and MCMs is presented that simultaneously minimizes layout area and an Elmore-based estimate of the maximum path delay while trying to meet a target aspect ratio. Explicit design space exploration is performed by using a vector-valued, 3-dimensional cost function and searching for a set of distinct solutions representing the best trade-offs of the cost dimensions. From the output solutions, the designer can choose the solution with the ...

Keywords: design space exploration, timing-driven building-block placement

11 <u>SAARA: a simulated annealing algorithm for test pattern generation for digital circuits</u>
Fulvio Corno, Paolo prinetto, Maurizio Rebaudenpgo, Matteo Sonza Reorda
April 1997 **Proceedings of the 1997 ACM symposium on Applied computing**



Full text available: pdf(436.17 KB) Additional Information: full citation, references, index terms

Keywords: simulated annealing, test pattern generation

12 Parallel two-level simulated annealing

Guo-Liang Xue

August 1993 Proceedings of the 7th international conference on Supercomputing

Full text available: pdf(915.41 KB) Additional Information: full citation, abstract, references, index terms

In this paper, we propose a new kind of simulated annealing algorithm called two-level simulated annealing for solving certain class of hard combinatorial optimization problems. This two-level simulated annealing algorithm is less likely to get stuck at a non-global minimizer than conventional simulated annealing algorithms. We also propose a parallel version of our two-level simulated annealing algorithm and discuss its efficiency. This new technique is then applied to the ...

13 Introductory tutorials: Simulation optimization

Michael C. Fu

December 2001 Proceedings of the 33nd conference on Winter simulation

Full text available: pdf(143.59 KB) Additional Information: full citation, abstract, references

In this tutorial introduction to simulation optimization, we present motivating and illustrative examples, summarize most of the major approaches, and briefly describe some software implementations. The focus is on issues and concepts, rather than mathematical rigor, so the format is Q & A rather than theorem-proof.

14 Enhanced simulated annealing for automatic reconfiguration of multiprocessors in

space

J., R. Slagle, A. Bose, P. Busalacchi, C. Wee

June 1989 Proceedings f the second international conference on Industrial and engineering applications f artificial intelligence and expert systems - Volume 1

Full text available: pdf(713.91 KB) Additional Information: full citation, abstract, references, index terms

This paper describes our recent results in developing enhanced simulated annealing algorithms using a LISP environment. The application is to use simulated annealing for automatic reconfiguration of multiprocessors in space. Our approach to solving this problem involves a combination of object-oriented programming, search strategies, knowledge based reasoning, and an advanced reconfiguration algorithm. The application was developed and is being enhanced on a LISP workstation (Xerox Dandelio ...

15 Enhanced simulated annealing for globally minimizing functions of many-continuous variables



June 1997 ACM Transactions on Mathematical Software (TOMS), Volume 23 Issue 2

Full text available: pdf(151.17 KB)

Additional Information: full citation, abstract, references, citings, index terms, review

A new global optimization algorithm for functions of many continuous variables is presented, derived from the basic Simulated annealing method. Our main contribution lies in dealing with high-dimensionality minimization problems, which are often difficult to solve by all known minimization methods with or without gradient. In this article we take a special interest in the variables discretization issue. We also develop and implement several complementary stopping criteria. The original Metr ...

Keywords: global optimization, stochastic optimization, test functions

16 Simulation optimization: methods and applications

Yolanda Carson, Anu Maria

December 1997 Proceedings of the 29th conference on Winter simulation

Full text available: pdf(1.04 MB)

Additional Information: full citation, references, citings, index terms

17 <u>Session 6D: Analog synthesis: ASF: a practical simulation-based methodology for the synthesis of custom analog circuits</u>

Michael J. Krasnicki, Rodney Phelps, James R. Hellums, Mark McClung, Rob A. Rutenbar, L. Richard Carlev

November 2001 Proceedings of the 2001 IEEE/ACM international conference on Computer-aided design

Full text available: pdf(225.63 KB) Additional Information: full citation, abstract, references

This paper describes ASF, a novel cell-level analog synthesis framework that can size and bias a given circuit topology subject to a set of performance objectives and a manufacturing process. To manage complexity and time-to-market, SoC designs require a high level of automation and reuse. Digital methodologies are inapplicable to analog IP, which relies on tight control of low-level device and circuit properties that vary widely across manufacturing processes. This analog synthesis solution aut ...

18 Advanced tutorials: Simulation optimization: a survey of simulation optimization techniques and procedures

James R. Swisher, Paul D. Hyden, Sheldon H. Jacobson, Lee W. Schruben December 2000 **Proceedings f the 32nd conference on Winter simulation**

Full text available: pdf(233.66 KB) Additional Information: full citation, abstract, references, citings

Discrete-event simulation optimization is a problem of significant interest to practitioners

interested in extracting useful information about an actual (or yet to be designed) system that can be modeled using discrete-event simulation. This paper presents a brief survey of 'the literature on discrete-event simulation optimization over the past decade (1988 to the present). Swisher et al. (2000) provides a more comprehensive review of this topic while Jacobson and Schruben (1989) covers the liter ...

19 A parallel genetic algorithm for the graph partitioning problem

E.-G. Talbi, P. Bessière

June 1991 Proceedings of the 5th international conference on Supercomputing

Full text available: pdf(801.46 KB) Additional Information: full citation, references, index terms

20 Heuristic and randomized optimization for the join ordering problem

Michael Steinbrunn, Guido Moerkotte, Alfons Kemper

August 1997 The VLDB Journal — The International Journal on Very Large Data Bases, Volume 6 Issue 3

Full text available: pdf(385.47 KB) Additional Information: full citation, abstract

Recent developments in database technology, such as deductive database systems, have given rise to the demand for new, cost-effective optimization techniques for join expressions. In this paper many different algorithms that compute approximate solutions for optimizing join orders are studied since traditional dynamic programming techniques are not appropriate for complex problems. Two possible solution spaces, the space of left-deep and bushy processing trees, are evaluated from a statistical p ...

Keywords: Genetic algorithms, Heuristic algorithms, Join ordering, Query optimization, Randomized algorithms

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- 1 Chiu K. and Htmter A. (1997) "Genetic Design of Real- Time Fttzz~ Logic Controllers," b~ternational co,fere,ce ~~PERSI:S-97, Sunderland, U.K., pp. 245- 250, Oct. 15-16, 1997.
- 2 Cord6n O., Herrem F., mid Lozano M. (1996) "A Classifitxt Review on the Combination Fuzzy." Logic- Genetic Algorithus Bibliography," Technical Report DECS.41-95129, Dept. of Computer Science and A.i., University of Granada, 1996. http://decsai, ugr. es/--lozano/public.html accessed March 23, 1998
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- 5 Petersen S. (1987) "Real Time Control of Urban Drainage Systems," M.sc. Thesis, Dept. of En,dromnental Engineering, Technical University. of Dem~mrk, August 1987, ISBN 87-89220-04--8.
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↑ INDEX TERMS

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I. Computing Methodologies

S 1.2 ARTIFICIAL INTELLIGENCE

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S I.2 ARTIFICIAL INTELLIGENCE

General Terms:

Design, Management

Keywords:

fuzzy logic control, genetic algorithms, real-time control

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1 Artificial intelligence approaches to software engineering: Using genetic algorithms and coupling measures to devise optimal integration test orders

Lionel C. Briand, Jie Feng, Yvan Labiche

July 2002 Proceedings of the 14th international conference on Software engineering and knowledge engineering

Full text available: pdf(94.62 KB)

Additional Information: full citation, abstract, references, citings

We present here an improved strategy to devise optimal integration test orders in objectoriented systems. Our goal is to minimize the complexity of stubbing during integration testing as this has been shown to be a major source of expenditure. Our strategy to do so is based on the combined use of inter-class coupling measurement and genetic algorithms. The former is used to assess the complexity of stubs and the latter is used to minimize complex cost functions based on coupling measurement. Us ...

Keywords: genetic algorithms, integration order, integration testing, object-oriented software engineering

2 Reviewed papers: Comparing the template method and strategy design patterns in a genetic algorithm application

Michael R. Wick, Andrew T. Phillips

December 2002 ACM SIGCSE Bulletin, Volume 34 Issue 4

Full text available: pdf(63.24 KB) Additional Information: full citation, abstract, references

We present a genetic algorithm software project that serves to give students direct experience with choosing among multiple potentially applicable design patterns. We carefully constructed this project to illustrate the power of design patterns in supporting encapsulation while at the same time providing a single context in which to compare and contrast similar design pattern alternatives.

3 Topological design of local-area networks using genetic algorithms Reuven Elbaum, Moshe Sidi

October 1996 IEEE/ACM Transactions on Networking (TON), Volume 4 Issue 5

Full text available: pdf(1.32 MB) Additional Information: full citation, references, index terms

Genetic algorithm based approach for designing computer network topology Anup Kumar, Rakesh M. Pathak, M. C. Gupta

March 1993 Proceedings of the 1993 ACM conference n C mputer science

Full text available: pdf(832.23 KB) Additional Information: full citation, abstract, references, index terms

One of the important features of computer networks is the potential for high reliability. The reliability of a network depends on many parameters such as connectivity, degree of each node, and average distance between any pair of nodes. The main focus of the problem considered in this paper is to design reliable computer network topologies. A generalized framework based on Genetic Algorithm is developed which is applicable to wide range of network design problems. Several topology design pr ...

Application of knowledge base design techniques to genetic markers Mark Graves



December 1995 Proceedings of the fourth international conference on Information and knowledge management

Full text available: pdf(754.44 KB) Additional Information: full citation, references, index terms

Interactive manipulation of rigid body simulations



Jovan Popović, Steven M. Seitz, Michael Erdmann, Zoran Popović, Andrew Witkin July 2000 Proceedings of the 27th annual conference on Computer graphics and interactive techniques

Full text available: pdf(886.24 KB)

Additional Information: full citation, abstract, references, citings, index terms

Physical simulation of dynamic objects has become commonplace in computer graphics because it produces highly realistic animations. In this paradigm the animator provides few physical parameters such as the objects' initial positions and velocities, and the simulator automatically generates realistic motions. The resulting motion, however, is difficult to control because even a small adjustment of the input parameters can drastically affect the subsequent motion. Furthermore, the animator o ...

Keywords: animation with constraints, physically based animation

7 Design space exploration and architectural design of HW/SW systems: Multi-objective design space exploration using genetic algorithms



Maurizio Palesi, Tony Givargis

May 2002 Proceedings of the tenth international symposium on Hardware/software codesign

Full text available: pdf(498.25 KB) Additional Information: full citation, abstract, references

In this work, we provide a technique for efficiently exploring a parameterized system-on-achip (SoC) architecture to find all Pareto-optimal configurations in a multi-objective design space. Globally, our approach uses a parameter dependency model of our target parameterized SoC architecture to extensively prune non-optimal sub-spaces. Locally, our approach applies Genetic Algorithms (GAs) to discover Pareto-optimal configurations within the remaining design points. The computed Pareto-optimal ...

Keywords: Pareto-optimal configurations, design space exploration, genetic algorithms, low power design, system-on-a-chip architectures

Genetic algorithms for modelling, design, and process control



Charles L. Karr

December 1993 Proceedings f the second international conference in Information and knowledge management

Full text available: 🔁 pdf(577.55 KB) Additional Information: full citation, references, index terms

Evolutionary co-operative design between human and computer: implementation of "the genetic sculpture park"



Duncan Rowland, Frank Biocca

February 2000 Proceedings f the fifth symp sium n Virtual reality m deling language (Web3D-VRML)

Full text available: pdf(1.98 MB)

Additional Information: full citation, abstract, references, index terms

The Genetic Sculpture Park seeks to blur the distinction between artist and observer and to empower the novice in the creation of complex computer graphic models. Each visitor to the park experiences a unique set of forms and engages in a co-operative dialogue with the computer to produce more aesthetically pleasing designs. Inspired by Darwin's Theory of Evolution, Genetic Algorithms are used to allow visitors to 'breed' forms tailored to his or her own individual sense of aesthetics. This ...

10 <u>Designing telecommunications networks using genetic algorithms and probabilistic minimum spanning trees</u>

Faris N. Abuali, Dale A. Schoenefeld, Roger L. Wainwright

April 1994 Proceedings of the 1994 ACM symposium on Applied computing

Full text available: pdf(567.60 KB) Additional Information: full citation, references, citings, index terms

11 Parameterised system design based on genetic algorithms

Giuseppe Ascia, Vincenzo Catania, Maurizio Palesi

April 2001 Proceedings of the ninth international symposium on Hardware/software codesign

Full text available: pdf(492.18 KB) Additional Information: full citation, abstract, references, index terms

A recent reduction in the time to market has led to the development of a new approach to IP-based design in which a highly parametric pre-designed system-on-a-chip is configured according to the application it will have to execute. The greatest problems in this area regard exploration of the range of possible system configurations in search of the optimal configuration for a given system. There are, in fact, a number of parameters involved (bus sizes, cache configurations, software algorithms ...

Keywords: exploration of system configurations, genetic algorithms, parameterised systems

12 The application of genetic algorithms to the design of reconfigurable reasoning VLSI chips

Moritoshi Yasunaga, Jung Hwan Kim, Ikuo Yoshihara

February 2000 Proceedings of the 2000 ACM/SIGDA eighth international symposium on Field programmable gate arrays

Full text available: pdf(672.51 KB) Additional Information: full citation, abstract, index terms

In this paper, we present a new genetic-algorithm-based design methodology for reasoning VLSI chips, called as LoDETT (logic design with the evolved truth table). In LoDETT, each task's case database is transformed into truth tables, which are evolved to obtain generalization capability (i.e. rules behind the past cases) through genetic algorithms. Digital circuits are synthesized from the evolved truth-tables. Parallelism in each task can be embedded directly in the circuits by the direct ...

13 Evolution using genetic programming of a low-distortion, 96 decibel operational amplifier

John R. Koza, Forrest H. Bennett, David Andre, Martin A. Keane April 1997 Pr ceedings of the 1997 ACM symposium on Applied computing

Full text available: pdf(913.91 KB) Additional Information: full citation, references, index terms

Keywords: analog circuit synthesis, automated circuit design, genetic programming,

operational amplifier

14 <u>Reconstructing occlusal surfaces of teeth using a genetic algorithm with simulated annealing type selection</u>

Vladimir Savchenko, Lothar Schmitt

May 2001 Proceedings of the sixth ACM symp sium on Solid modeling and applications

Full text available: pdf(708.02 KB) Additional Information: full citation, abstract, references, index terms

In this paper, we present an application of numerical optimization for surface reconstruction (more precisely: reconstruction of missing parts of a real geometric object represented by volume data) by employing a specially designed genetic algorithm to solve a problem concerning computer-aided design in dentistry. Using a space mapping technique the surface of a given model tooth is fitted by a shape transformation to extrapolate (or reconstruct) the remaining surface of a patient's tooth wit ...

Keywords: computer-aided restoration design, constructive solid geometry, genetic algorithm, simulated annealing, space mapping, surface reconstruction, volume modeling

15 HGA: a hardware-based genetic algorithm

Stephen D. Scott, Ashok Samal, Shared Seth

February 1995 Proceedings of the 1995 ACM third international symposium on Fieldprogrammable gate arrays

Full text available: pdf(159.28 KB) Additional Information: full citation, abstract, index terms

A genetic algorithm (GA) is a robust problem-solving method based on natural selection. Hardware's speed advantage and its ability to parallelize offer great rewards to genetic algorithms. Speedups of 1-3 orders of magnitude have been observed when frequently used software routines were implemented in hardware by way of reprogrammable field-programmable gate arrays (FPGAs). Reprogrammability is essential in a general-purpose GA engine because certain GA modules require changeability (e.g. t ...

Keywords: field programmable gate arrays, function optimization, parallel genetic algorithms, performance acceleration, performance evaluation

16 A performance-driven IC/MCM placement algorithm featuring explicit design space exploration

Henrik Esbensen, Ernest S. Kuh

January 1997 ACM Transactions on Design Automation of Electronic Systems (TODAES), Volume 2 Issue 1

Full text available: pdf(485.86 KB)

Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>index terms</u>, <u>review</u>

A genetic algorithm for building-block placement of ICs and MCMs is presented that simultaneously minimizes layout area and an Elmore-based estimate of the maximum path delay while trying to meet a target aspect ratio. Explicit design space exploration is performed by using a vector-valued, 3-dimensional cost function and searching for a set of distinct solutions representing the best trade-offs of the cost dimensions. From the output solutions, the designer can choose the solution with the ...

Keywords: design space exploration, timing-driven building-block placement

17 DARWIN: CMOS opamp synthesis by means of a genetic algorithm

Wim Kruiskamp, Domine Leenaerts

January 1995 Pr ceedings of the 32nd ACM/IEEE c nference on Design automati n c nference

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April 1997 Proceedings of the 1997 ACM symposium on Applied computing

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Full text available: pdf(913.91 KB) Additional Information: full citation, references, index terms

Keywords: analog circuit synthesis, automated circuit design, genetic programming, operational amplifier

² Evolving computer programs using rapidly reconfigurable field-programmable gate arrays and genetic programming

John R. Koza, Forest H. Bennett, Jeffrey L. Hutchings, Stephen L. Bade, Martin A. Keane, David Andre

March 1998 Proceedings of the 1998 ACM/SIGDA sixth international symposium on Field programmable gate arrays

Full text available: pdf(1.37 MB)

Additional Information: full citation, abstract, references, citings, index terms

This paper describes how the massive parallelism of the rapidly reconfigurable Xilinx XC6216 FPGA (in conjunction with Virtual Computing's H.O.T. Works board) can be exploited to accelerate the time-consuming fitness measurement task of genetic algorithms and genetic programming. This acceleration is accomplished by embodying each individual of the evolving population into hardware in order to perform the fitness measurement task. A 16-step sorting network for seven items was evolved that h ...

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41 Genetic VLSI circuit partitioning with two-dimensional geographic crossover and zigzag mapping

Buyng-Ro Moon, Yoon-Sik Lee, Chun-Kyung Kim

April 1997 Proceedings of the 1997 ACM symposium on Applied computing

Full text available: pdf(499.27 KB) Additional Information: full citation, references, index terms

Keywords: circuit partitioning, equivalence class, genetic algorithm, geographic crossover, geographical linkage

42 Estimation of maximum power supply noise for deep sub-micron designs

Yi-Min Jiang, Kwang-Ting Cheng, An-Chang Deng

August 1998 Proceedings of the 1998 international symposium on Low power electronics and design

Full text available: pdf(814.48 KB) Additional Information: full citation, abstract, citings, index terms

We propose a new technique for generating a small set of patterns to estimate the maximum power supply noise of deep sub-micron designs. We first build the charge/discharge current and output voltage waveform libraries for each cell, taking power and ground pin characteristics, the power net RC and other input characteristics as parameters. Based on the cells' current and voltage libraries, the power supply noise of a 2-vector sequence can be estimated efficiently by a cell-level wa ...

43 GSA: scheduling and allocation using genetic algorithm

Ali Shahid, Muhammed S. T. Benten, Sadiq M. Sait

September 1994 Proceedings of the conference on European design automation conference

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44 A genetic algorithm for learning fuzzy controllers

Cezary Z. Janikow

April 1994 Proceedings f the 1994 ACM symposium on Applied computing

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Keywords: fuzzy control, genetic algorithms, rule-based learning

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56 <u>VLSI cell placement techniques</u>
K. Shahookar, P. Mazumder
June 1991 **ACM Computing Surveys (CSUR)**, Volume 23 Issue 2

cooperative work

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This paper analyzes the initial phases of a large-scale custom software effort, the Worm Community System (WCS), a collaborative system designed for a geographically dispersed community of geneticists. Despite high user satisfaction with the system and interface, and extensive user feedback and analysis, many users experienced difficulties in signing on and use, ranging from simple lack of resources to complex organizational and intellectual tradeoffs. Using Bateson's levels of learning, w ...

Keywords: collaboratory, ethnography, infrastructure, organizational computing, participatory design

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Parag C. Pendharkar, James A. Rodger

January 1999 Proceeding of the 20th international conference on Information Systems

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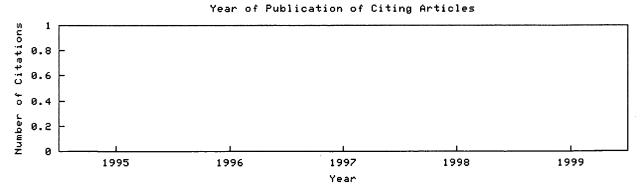
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